

Tau Beta Pi Engineering Futures Curriculum

The Tau Beta Pi Engineering Futures Program consists of four modules of materials which deal with interpersonal relationships and working with others, either as teams or in other group settings. Each module is broken into sessions; each session runs from 90-120 minutes in length. All of the materials make use of several of the following formats:

- icebreakers for allowing students and facilitators to get to know each other
- group discussion
- videotaped examples of applications of the skills
- role playing (individually, in pairs, or in groups of 3)
- group exercises
- flip charts and handouts
- contracts (which allow participants to focus on applying the skills to real-life situations)

People Skills Module — one-on-one problem solving

Basic (Sessions 1 & 2) and Advanced (Sessions 3 & 4)

PS1 — Describing Problems

This session focuses on the first step in solving problems: defining and describing the problem. Students learn how to describe problems in a direct, specific, and non-punishing manner, which allows them to start problem solving in a way that gets the problem solved and in a way that maintains relationships with others.

PS2 — Motivation Problems

One general root cause of problems, and probably the most challenging cause to overcome, is a lack of motivation: someone does not want to do a task. In this session, students learn how to motivate people through the use of consequences, both natural (consequences which happen without effort on their part) and imposed (where someone needs to take an action to make the consequence happen). Students also learn how to set up and follow plans once a solution is agreed upon to help ensure that the problem is permanently solved.

PS3 — Ability Problems

The other general type of problem is ability, where someone is unable to do a task. In this session, students learn how to help others solve their own ability problems by asking them for ideas and helping them come up with solutions on their own, or with the student's help. Examples in this session show how to do this in a way that encourages the other person, and helps them to solve their own problems more effectively in the future.

PS4 — Emergent Problems

In the course of problem solving, issues other than the "main" problem sometimes crop up; this can be due to several problems being related to each other, or to the emotional or complex nature of the original problem. In this session, students learn to identify emergent problems, determine when they can be put aside, how to put them aside, and how to address them when necessary. Students also learn how to address problems involving high emotion (anger, stress, etc.) or a high degree of complexity.

Team Chartering — working in teams

TC1 — Role of Teams (Session 1)

This session teaches the importance of teams in today's society, what defines a team, when teams are appropriate, and the stages of a team's development. Students discuss the importance of teams by learning about the changes in tasks and demographics which have made them so important in today's world. Students also learn about the advantages of teams and how teams work together through several hands-on exercises.

TC2 — Defining a Team’s Own Charter (Session 2)

This session is designed for teams who are going to be continuing to work together after the session, such as chapter officers or project groups. This session gives team members an opportunity to get to know each other better through an extended icebreaker-type activity, and gives them tools for setting goals and defining plans for the future. Students also have time during the session to actually use the tools for goal setting and planning.

Group Process — preparing for and running or participating in group meetings

MM — Meeting Management (Session 1)

This session provides students with information on how to effectively prepare for group meetings. Students learn how to decide when meetings are necessary, who to invite to meetings, how to set up a room depending on the purpose and size of the meeting, how to organize and publish an effective agenda, what roles (such as facilitators, time keepers, note takers) people need to take on during the meeting in order to keep it on, and how to successfully perform these roles.

TD — Team Dynamics (Session 2)

This session deals with how to keep a meeting on track once it has started. Students learn about a variety of situations (interruptions, changing topics, criticism of other participants, participants unwilling to move on to the next topic) which can force a meeting off track, and the students then learn how to apply the skill of “tipping the baton” to get the meeting back on course.

Analytical Problem Solving — processes and tools for solving challenging problems in a team setting

AP1 — The Problem Solving Model/Creativity

Students learn a model for problem solving which involves identifying issues, root causes, solutions, implementation of plans, and evaluation of success. Each step of the process requires two basic activities in order to perform it successfully: generating ideas and evaluating ideas. In this session, students learn basic skills for generating ideas via creative thinking, with the help of several rehearsal activities which give them a chance to practice thinking creatively.

AP2 — Advanced Creativity

In this session, students use additional activities and puzzles to learn new ways to think creatively, and to further improve their ability to generate a large list of ideas to work with.

AP3 — List Reduction

In this final session of the module, students learn a process for the “other” half of the process: how to take a large list of a variety of ideas, and narrow it down to the one or the few “best” ideas to go forward with. Students learn how to clarify issues, create selection criteria, remove non-controversial ideas, narrow down the list to a “vital few”, and use consensus to identify the best solutions.

Medley Session — overview of all sessions

This session is designed for chapter officers who will have a role in selecting or publicizing Engineering Futures sessions at their school. This session covers highlights from all of the EF materials, and shows participants examples of the variety of formats that are used to teach the material. The purpose of the session is to give participants enough of an understanding of the EF curriculum to be able to explain it to others, and to help them select sessions that would be most appropriate for their fellow students.

Request forms available on our website (www.tbp.org) or by calling headquarters at 1/800/TAU-BETA.